

REMARKS

Claims 1-9 and 11-54 are currently pending in this application. Claims 27-54 were withdrawn from consideration. Reconsideration of the rejections of claims 1-26 is respectfully requested in light of the following remarks.

The Examiner rejected claims 1-5, 8-9, 14-18 and 21-22 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent 5,891,176 to Bornzin. This rejection is respectfully traversed.

Applicant's claimed invention is directed to a system and method for automatic pacing interval optimization for each of a plurality of heart rate ranges. The method of the claimed invention in independent claim 1 includes the steps of determining whether significant patient motion is present and pacing the patient's heart using a plurality of different pacing intervals for each of a plurality of different heart rate ranges only when significant motion is not present.

The system recited in independent claim 14 includes the limitation of means for determining whether significant motion of the patient is present and "means for pacing a patient's heart using a plurality of different pacing intervals, for each of the plurality of different heart rate ranges only when significant patient motion is not present". Applicant submits that neither Bornzin nor Carlson disclose or suggest the recited claim elements.

The Examiner admits that Bornzin does not disclose pacing at various delays for multiple heart rates only when significant patient motion is not present as recited in the claimed invention. The Examiner alleges however that Carlson discloses a pacemaker with a hemodynamic pulse pressure sensor that utilizes an

accelerometer to determine motion so that measurements can be taken during relative steady state. The Examiner argues that it would have been obvious therefore to modify the invention of Bornzin with the motion sensing techniques of Carlson in order to minimize motion artifacts in the signal. Applicant respectfully disagrees.

While the Carlson reference is directed to optimization of pacing intervals similar to the claimed invention in independent claims 1 and 14, Carlson does not teach, suggest or disclose that optimization should be performed over a plurality of heart rate ranges. In fact, Carlson teaches away from sensing at multiple rate ranges. "Analyzing the accelerometer signal during the period of quiescent activity minimizes motion artifact in the accelerometer signal. Further, analyzing the signal during the period of quiescent activity allows the measurements to be taken during relative steady state hemodynamic conditions." Col. 3, lines 7-12. As such, it would not have been obvious to combine the system of Carlson with any of the other rate responsive pacing references previously applied.

Moreover, even if one were to combine Bornzin with Carlson one would still not arrive at Applicant's claimed invention. For example, neither Carlson nor Bornzin disclose pacing the patient's heart using a plurality of different pacing intervals for each of a plurality of different heart rate ranges only when significant motion is not present as recited in the claimed invention. Rather, as noted above Carlson does not in any way disclose or suggest pacing over a plurality of heart rate ranges and can not therefore disclose only pacing when significant motion is not present. Similarly, as the Examiner notes Bornzin does not disclose pacing only

when significant motion is not present. Accordingly, withdrawal of the rejection of claims 1-5, 8-9, 14-18 and 21-22 is respectfully requested.


The Examiner rejected claims 6-7 and 19-20 under 35 U.S.C. § 103(a) as being unpatentable over Bornzin as applied to claim 1, in view of U.S. Patent Publication 2001/00311993 to Salo. The Examiner also rejected claims 10-13 and 23-26 under 35 U.S.C. § 103(a) as being unpatentable over Bornzin as applied to claims 1 and 14 in view of U.S. Patent 6,366,811 to Carlson. Applicant respectfully traverses these rejections.

In view of the foregoing analysis of independent claims 1 and 14 in view of Bornzin, Applicant believes that the rejection of dependent claims 6-7, 10-13, 19-20 and 23-26 under §103 is rendered moot as claims 6-7 and 10-13 and claims 19-20 and 23-26 depend from allowable independent claims 1 and 14 respectively.

Pursuant to 37 C.F.R. 1.136(a)(3), Applicant hereby requests and authorizes the U.S. Patent and Trademark Office to (1) treat any concurrent or future reply that requires a petition for extension of time as incorporating a petition for extension of time for the appropriate length of time and (2) charge all required fees, including extension of time fees and fees under 37 C.F.R. 1.16 and 1.17, to Deposit Account No. 22-0265.

Respectfully submitted,

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By: 
Peter A. Nichols
Attorney for Applicant
Registration No. 47,822

Customer Number: 24473